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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,508	10/06/2005	Ulf Skoglund	1501-1290	5479

466 7590 10/01/2007  
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EXAMINER
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FUJITA, KATRINA R

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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10/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/520,508

Applicant(s)

SKOGLUND ET AL.

Examiner

Katrina Fujita

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 01/07/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. This Office Action is responsive to Applicant's remarks received on January 07, 2005. Claims 27-52 remain pending.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

3. The disclosure is objected to because of the following informalities:

The first line of the specification does not include a sentence acknowledging applicant's claim for foreign priority. The examiner suggests amending the specification to include that information.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

5. The following is a quotation of 37 CFR 1.75(a):

The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

6. Claims 28, 29, 32, 34-36, 40-42, 44, 46-49 and 52 are objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Claim 28 recites "at least one object" in line 3. It is unclear whether this is intended to be the same as or different from the "at least one object" in line 1 of claim 27. The following will be assumed for examination purposes: -- said at least on object -- . The same applies to claim 41, line 4.

Claim 29 lacks antecedent basis for "the COMET technology" in line 2. The following will be assumed for examination purposes: -- ~~the~~ COMET technology --. The same applies to claim 42, line 3.

Claim 32 lacks antecedent basis for "the information content" in line 2. The following will be assumed for examination purposes: -- ~~the~~ information content --. The same applies to claim 44, line 2 and claim 49, line 2.

Claim 34 lacks antecedent basis for "said 2D-images" in line 3. The following will be assumed for examination purposes: -- ~~said~~ 2D-images --. The same applies to claim 35, line 3, claim 46, line 3, and claim 47, line 3.

Claim 34 lacks antecedent basis for "the point spread function" in line 4. The following will be assumed for examination purposes: -- ~~the~~ a point spread function --. The same applies to claim 35, line 4, claim 36, line 3, claim 46, line 4, claim 47, line 4 and claim 48, line 3.

Claim 36 lacks antecedent basis for "the 2D-images" in line 3. The following will be assumed for examination purposes: -- ~~the~~ 2D-images --. The same applies to claim 48, line 3.

Claim 40 lacks antecedent basis for "said sample" in line 5. The following will be assumed for examination purposes: -- ~~said~~ a sample --.

Claim 49 lacks antecedent basis for "the first computer program" in line 3. The following will be assumed for examination purposes: -- ~~the~~ a first computer program --. The same applies to claim 52, line 3.

Claim 52 lacks antecedent basis for "the prior structure data" in line 3. The following will be assumed for examination purposes: -- ~~the~~ prior structure data--.

Claim 52 lacks antecedent basis for "the structure data base" in line 4. The following will be assumed for examination purposes: -- ~~the~~ a structure data base--.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 27-30, 32-36, 39, and 40-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Skoglund et al. (EP 0 885 430).

Regarding **claims 27 and 40**, Skoglund et al. discloses a method and an apparatus for imaging of at least one object comprising the following steps:

means (figure 1, numeral 11, which is equivalent to applicant's disclosed image memory) for receiving image information about a sample (figure 1, numeral 1) collected by means of a microscope (figure 1, numeral 10),

means selecting a part of said sample to be imaged as a volume (figure 1, numeral 13)

means (portion of figure 1, numeral 12 that is "used in order to achieve a 3D image reconstruction" at paragraph 0048, line 2, which is equivalent to applicant's

discloses program) for reconstructing the collected image information for said volume using an iterative reconstruction method ("several iteration cycles" at paragraph 0062, line 5) in which a prior prejudice distribution (figure 1, numeral 21) is refined in at least one step on the basis of a comparison with the collected image information ("next preceding iteration reconstruction result" at paragraph 0063, line 7).

Regarding **claims 28 and 41**, Skoglund et al. discloses a method and apparatus further comprising

means (portion of figure 1, numeral 12 that constructs "a 3D image reconstruction of single particle macromolecular objects" at paragraph 0025, line 1, which is equivalent to applicant's disclosed program) for selecting said at least one object ("one sample particle" at paragraph 0052, line 2) within said volume

means (portion of figure 1, numeral 12 that loads "supporting data and data calculated in the other subprograms" at paragraph 0103, line 1, which is equivalent to applicant's disclosed program) for analyzing a part of the image information related to said at least one object (figure 2C, numeral S14).

Regarding **claims 29 and 42**, Skoglund et al. discloses a method and apparatus wherein said means for reconstructing the collected image information is arranged to apply a reconstruction method based on COMET technology ("constrained maximum entropy tomographic reconstruction" at paragraph 0070, line 1).

Regarding **claims 30 and 43**, Skoglund et al. discloses a method and apparatus further comprising means (portion of figure 1, numeral 12 used to "compare projections to the observed micrographs" at paragraph 0053, line 4, which is equivalent to

applicant's disclosed program) for selecting the at least one object in dependence of the shape and/or size of the object ("processed regarding geometry description" at paragraph 0053, line 3).

Regarding **claims 32 and 44**, Skoglund et al. discloses a method and apparatus further comprising measuring means (portion of figure 1, numeral 12 that loads "supporting data and data calculated in the other subprograms" at paragraph 0103, line 1, which is equivalent to applicant's disclosed program) for measuring information content of the reconstructed image information (figure 2C, numeral S14).

Regarding **claims 33 and 45**, Skoglund et al. discloses a method and apparatus wherein the step of collecting image information comprises collecting several 2D-images ("2D projections" at paragraph 0103, line 11) and further comprising aligning means (portion of figure 1, numeral 12 that loads the "Geometry description" at paragraph 0103, line 9, which is equivalent to applicant's disclosed program) for aligning several 2D-images related to a sample ("make projections in the right directions" at paragraph 0103, line 9).

Regarding **claims 34 and 46**, Skoglund et al. discloses a method and apparatus wherein said reconstruction means for reconstructing the collected image information is arranged to reconstruct 3D-data from 2D-images without deconvoluting a point spread function (figure 2C, numeral S19).

Regarding **claims 35 and 47**, Skoglund et al. discloses a method and apparatus wherein the means for reconstructing the collected image information is arranged to



reconstruct 3D data from 2D-images including deconvoluting a point spread function (figure 2B, numeral S13).

Regarding **claims 36 and 48**, Skoglund et al. discloses a method and apparatus wherein the means for reconstructing the collected image information is arranged to first deconvolute a point spread function for 2D-images (figure 2B, numeral S13) and then reconstruct 3D-data without deconvoluting the point spread function (figure 2C, numeral S19).

Regarding **claim 39**, Skoglund et al. discloses a method further comprising the step of displaying the reconstruction on a computer screen (figure 1, numeral 16).

Regarding **claim 49**, Skoglund et al. discloses an apparatus further comprising data processing means (portion of figure 1, numeral 12 that loads "supporting data and data calculated in the other subprograms" at paragraph 0103, line 1, which is equivalent to applicant's disclosed program) for measuring information content of the reconstruction produced by a first computer program ("Second subprogram" at paragraph 0101, line 17).

Regarding **claim 50**, Skoglund et al. discloses an apparatus further comprising auxiliary memory means (figure 1, numeral 18, which is equivalent to applicant's disclosed memory) for storing other data regarding the sample (paragraph 0058).

Regarding **claim 51**, Skoglund et al. discloses an apparatus further comprising structure memory means (figure 1, numeral 19) for storing prior structure data (paragraph 0061).

Regarding **claim 52**, Skoglund et al. discloses an apparatus further comprising data processing means (portion of figure 1, numeral 12 that loads the "observed and calculated projections" at paragraph 0104, line 1, which is equivalent to applicant's disclosed program) for combining the reconstructed or measured data output from a first computer program ("Second subprogram" at paragraph 0101, line 17) with prior structure data comprised in a structure data base (figure 1, numeral 19) to refine the reconstructed image ("denormalize calculated projections against observed data in order to provide a common level" at paragraph 0104, line 4).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Skoglund et al. and Ellis et al. (US 6,418,236).

Skoglund et al. discloses the elements of claim 27 as described in the 102 rejection above.

Skoglund et al. does not disclose exposing the sample to markers before collecting the image information.

Ellis et al. discloses a method in the same field of endeavor of biological sample analysis comprising the step of exposing the sample to markers before collecting the image information ("biological specimen is stained and counterstained for a specific marker" at col. 1, line 27).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the specimen labeling of Ellis et al. in the sample of Skoglund et al. such that the "pathologist or technician can identify whether the candidate object of interest has been specifically stained for the marker of interest" (Ellis et al. at col. 1, line 56).

11. Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Skoglund et al. and Lozniewski et al. ("Gastric Penetration of Amoxicillin...", AAC article).

Skoglund et al. discloses the elements of claim 27 as described in the 102 rejection above.

Skoglund et al. does not disclose preparing the sample by means of cryomicrotomy or by means of flash freezing.

Lozniewski et al. discloses a method in the same field of endeavor of biological sample analysis comprising the step of preparing the sample by means of

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cryomicrotomy and flash freezing ("cryomicrotomy at -20°C" at page 1910, left column, 5<sup>th</sup> sentence up from the bottom).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the cryomicrotomy of Lozniewski et al. to prepare the sample of Skoglund et al. as it "prevents any significant contamination from interstitial tissue and plasma" (Lozniewski et al. at page 1912, left column, 1<sup>st</sup> full paragraph, line 13).

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katrina Fujita whose telephone number is (571) 270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Katrina Fujita  
Art Unit 2624



**BRIAN WERNER**  
**SUPERVISORY PATENT EXAMINER**